American Journal of Physics

LETTERS TO THE EDITOR | SEPTEMBER 01 2026

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Am. J. Phys. 94, 723–724 (2026)
https://doi.org/10.1119/5.0350481

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LETTERS TO THE EDITOR

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Saving General Electric's 1939 lightning laboratory and research library

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(Received 30 June 2026; accepted 3 July 2026)

https://doi.org/10.1119/5.0350481

The Turn Of The Century Electrotherapy Museum.

We are reaching out to announce the rescue of more than 40 000 pounds of high voltage equipment, books, and research papers from General Electric's last remaining "Lightning Laboratory," formerly located in Baltimore, MD.

The high voltage research laboratory was one of three originally owned by General Electric—the other two locations were more famously located in Pittsfield, MA, and Schenectady, NY. The third lab in Baltimore worked in conjunction with Locke Insulator (later NGK-Locke), and also did work for the U.S. Bureau of Standards as well as for the Army and Navy developing military standards for porcelains and glazes.

Charles Steinmetz first led General Electric into this pioneering field of lightning research in 1925. The company was trying to decipher how telegraphs and telephones could burn out and develop faults in lightning storms when there were no direct strikes. This led directly to the discovery of Electromagnetic Pulses (EMPs). General Electric was able to replicate natural lightning—not only simulating power levels of natural lighting but also the same waveform. We were able to save several of the original oscilloscopes used for this purpose, and also the original cameras used to photograph the waveforms—but the most impressive piece of equipment was a giant 36-ft tall Marx Impulse Generator rated for 3 MeV (Fig. 1). With the help of Chad Elam's crew from SUSA International, we disassembled the tower piece-by-piece using a 50-ton crane while the 500 000 sq ft facility was undergoing demolition (Fig. 2). The facility is now home to Locke Landing, a new housing development on the waterfront of the Baltimore Peninsula.

Thanks to the generous support of the landowners, the crew at SUSA, and the urban exploration Youtuber's known as "The Proper People," the lab was saved and is now located in South Florida in "The Turn of The Century Electrotherapy Museum."[1] This eccentric collection started 30 years ago as a quest to warn people of the dangers of medical quackery that was prevalent in the late 1800s and early 1900s. Over the decades, the museum has grown to include the history of x rays, vacuum discharge tubes, static electric machines, high frequency coils, ultraviolet lamps, and legitimate medical devices in addition to the world's largest collection of original electrographs and Lichtenburg figures. It has become an unusual mix of classic physics apparatus, oddities, and now high energy physics apparatus.

The research library saved at Locke contains hundreds of bound volumes of electrical engineering journals, lightning research books, materials science references, and more than

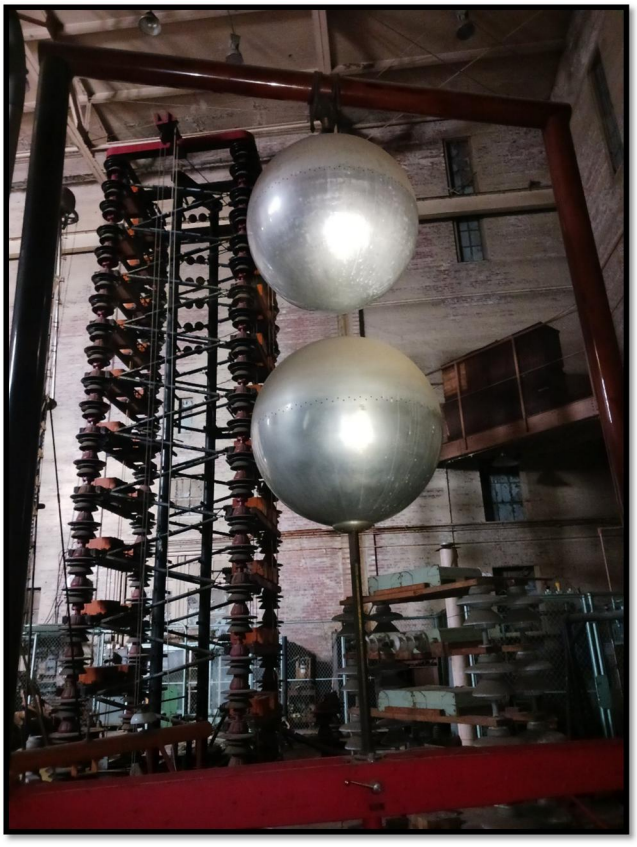

Fig. 1. 36-ft tall Marx impulse generator with sphere gap volt meter. The spheres were precision spun and machined at O.W. Landergren, Inc. in 1939 when the tower was first built.

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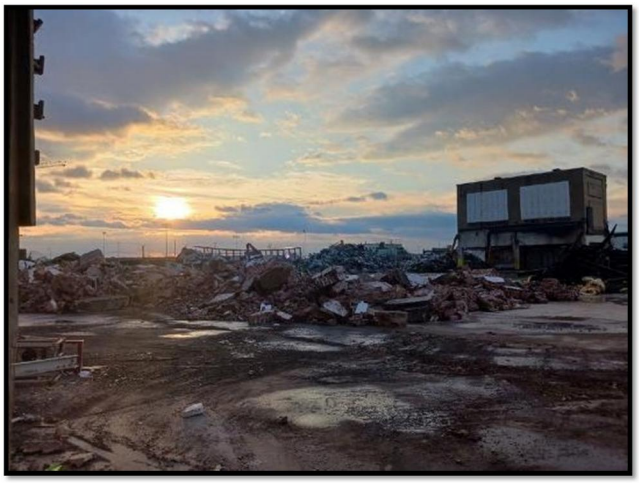

Fig. 2. Locke Insulator, in the final hours with only the high voltage lab remaining.

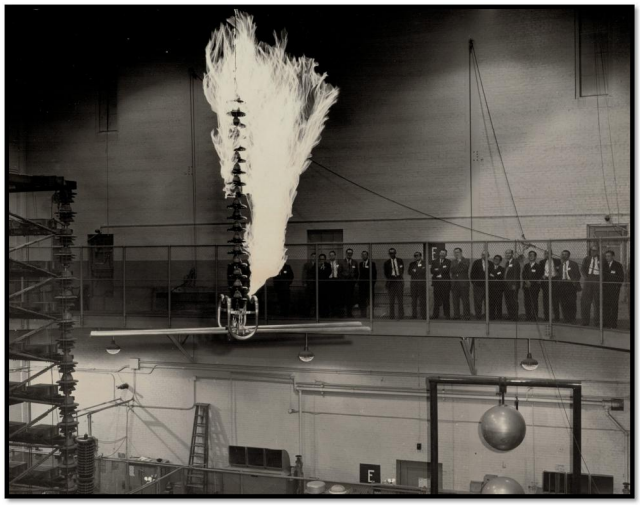

Fig. 3. Original photograph of an insulator being tested with a crowd of spectators.

1000 research papers—many of which were unpublished. The high voltage lab charged $3600/day to do this research in the 1960s. The topics of the papers range from Electromagnetic Pulse research, porcelain insulator and glaze manufacturing secrets, the development of sphere gap voltmeters and impulse generators, the development of non-inductive card resistors for wave shaping, the prevention of transients and electrical noise on power lines, radio and TV interference from transmission and distribution lines, the development of early experimental Extra High Voltage transmission lines, the development of polymer insulators, novel stress tests that combined electrical, mechanical, and insulating fatigue on materials (Fig. 3), accelerated corrosion tests of high voltage insulators and equipment, and kindred topics.

The museum is slowly scanning its entire library archive as 600 dpi high resolution color PDFs for the Internet Archive.[2] The books date from the 1600 s–1900s. There are currently over 300 000 pages online, free to the public. The General Electric high voltage laboratory is currently partially on display at the museum, which is located inside of RGF Environmental Group, Inc., in Riviera Beach, FL. Ideally, the museum would like to partner with a research facility to have the entire lightning laboratory on display and the library available to engineering students across the country who are interested in high energy physics. Fully restored, the Marx impulse generator would generate the largest voltage in the world in a public space.

Please contact the authors if you are interested in learning more, visiting the museum in person, or collaborating in any way.

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[1]The Turn of the Century Electrotherapy Museum, http://www.electrotherapymuseum.org

[2]The Internet Archive, Electrotherapy Museum Collection, digitized by Jeff Behary https://archive.org/details/@jeff_behary

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